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**NORTHERN
REGIONAL
RESEARCH
CENTER**



**VISITORS
GUIDE**



Agricultural Research Service
U.S. Department of Agriculture
Peoria, Illinois



The Northern Regional Research Center (NRRC) is an Agricultural Research Service (ARS) facility that was established by Congress in 1938 to seek new and expanded uses for farm products. NRRC was given responsibility for doing research on corn, wheat, grain sorghum, soybeans, flaxseed, and other crops grown in the north central part of the United States. Later evaluation of uncultivated plants as possible new crops was added.

Studies have mainly been on the use of these crops and such components as starch, oil and proteins, by chemical and related industries. A major part of research projects pertains to foods, particularly maintenance and improvement of food quality and economy, and to feeds, particularly those incorporating waste materials.

Increasing social awareness and consumer concern have broadened the objectives of USDA research to include improvements in living for all people. Efforts to meet this challenge at NRRC have brought about changes that have increased emphasis on health-related research, as well as work on pollution control, conservation of resources, and improvements in human well-being.

Information gained from NRRC investigations is made available to the public, to industry, and to allied USDA agencies through articles in scientific journals and trade magazines, by issuance of public service



Tempeh—a fermented soybean food

patents and USDA publications, and by means of scientific or industrial conferences and meetings, as well as through personal consultations.

Research Highlights

Since research began at NRRC in 1940, many important discoveries have been made. One of the best known is the method for mass producing penicillin, an antibiotic discovered in England. This achievement laid the foundation for the antibiotic industry.



Scientists at NRRC also developed processes for the fermentative production of vitamins B₂ and B₁₂ and improved the fermentative process leading to beta-carotene, a vitamin A source for livestock and poultry.

Successful development of the U.S. export market for soybeans to Japan was aided by research that made American beans acceptable to the Japanese palate in such traditional foods as miso and tofu. Studies on the flavor and heat stability of soybean oil contributed toward making this the major edible oil in the United States. A linseed oil emulsion, developed



Paper from kenaf—a new crop

at NRRC, protects many concrete highways throughout the nation from the damaging effects of winter weather and the application of salt.



Starch research has led to such developments as dialdehyde starch, a product that increases the wet strength of paper up to 10 times; dextran, a material used as a blood plasma extender and as the basis of a product widely used in chemical separations in research and industry; and xanthan, a commercially successful food-grade water-soluble gum. Xanthan has become an accepted thickening, suspending, emulsifying, and stabilizing agent in a wide range of food products.



Xanthan also has an established industrial market as an important ingredient in drilling muds and a potential market in the recovery of petroleum from wells no longer easily producing oil by conventional means.

An improved process for preparing a flour from dry-milled corn germ recovers a nutritious food ingredient from a corn milling byproduct formerly used only in animal feed. The corn-dry milling industry has the capacity to produce approximately 250 million pounds of the flour annually. Successful incorporation of the flour in cookies, muffins, beef patties, and



Laboratory fermentation of feedlot waste

bread indicates considerable potential as a supplement in a variety of foods.



As we begin to realize the danger of using up many of our natural resources, annually renewable agricultural commodities will receive greater attention as raw materials for more and more products. At the same time, energy saving, through improved processes and new products becomes an increasingly important goal.

Research on starch may change rubber technology by providing (1) powdered rubber that can be processed with much less energy than conventional slab rubber and (2) economical replacements for a large portion of petroleum-derived carbon blacks used to reinforce rubber. A new starch product that absorbs hundreds of times its own weight in water has many potential uses in consumer products (e.g., disposable diapers) and may aid agriculture by providing moisture-holding coatings for seeds and roots of seedlings.



Work on an annual plant called kenaf, by providing a supplementary source of papermaking fiber, might ease the paper shortage and retard the rate of forest depletion.

Reducing pollution from wastes associated with large cattle feedlot operations may become a reality by turning this waste into useful building materials, fuel, and feed.

Animal and Plant Health Inspection Service

Early in 1973, space within the south wing was made available to the Animal and Plant Health Inspection Service (APHIS), an agency of the U.S. Department of Agriculture. A National Residues Laboratory was established here by the Scientific and Technical Services (STS) branch of APHIS. This APHIS facility tests meat and poultry samples taken at slaughter plants and ports of entry for residues of drugs, antibiotics, pesticides, and other chemicals. Consolidation of six testing sites previously located across the country into one specialized unit makes possible the best utilization of people, equipment, and space.



Research Environment

The original building, erected in 1940, resembled a square block letter "C". An addition completed in 1967 transformed this structural outline into one forming an "E". Each of the three wings houses individual laboratory units, offices, and special areas. Across the front or backbone are the administrative offices, library, auditorium, conference rooms, computer facility, shops, cafeteria, and other services.

Contained within the wings of the building are 135 individual laboratories and about 75 special-use areas furnished with the latest scientific equipment. A large pilot plant, for developing laboratory processes to simulate industrial conditions, occupies almost all the north wing. The pilot plant extends from the basement through the third floor level.

In the NRRC complex, a staff of about 400 scientists, technicians, and supporting personnel are finding new and basic knowledge about farm commodities, particularly those of the Midwest, to develop new products or processes and to improve existing ones to meet the needs of agriculture, consumers, and industry. To aid in this search, more than 500 periodicals and professional journals come into the chemical and technical library on a weekly, monthly, or semiannual basis. Past issues are bound and maintained as reference sources. About 35,000 such volumes are available to researchers for con-

sultation, together with some 10,000 books. This library is available for use by non-NRRC scientists, students, and other citizens by appointment with the librarian.

Engineering design and drafting, glassblowing, instrument making, and services of electrical, machine, paint, plumbing, and carpenter shops are provided to assist the Center's scientists in their research. In addition, a complete photographic unit prepares scientific illustrations and graphic art that are reproduced in more than one hundred scientific reports published each year.

As part of the investigations being conducted at the Northern Research Center, one of the world's largest and most complete collections of agriculturally and industrially important bacteria, yeasts, molds, and actinomycetes is maintained. Known as the ARS Culture Collection, it serves as a source of authentic microorganisms for the fermentative production of such products as organic acids, vitamins, antibiotics, enzymes, feeds, beverages, and foods. Also, it serves as a repository for strains concerned with patent applications and as a source of microorganisms of value in USDA's research studies on pollution control and health. Culture strains from the ARS Collection are designated by a serial number following the prefix NRRL.

Visits to the Center

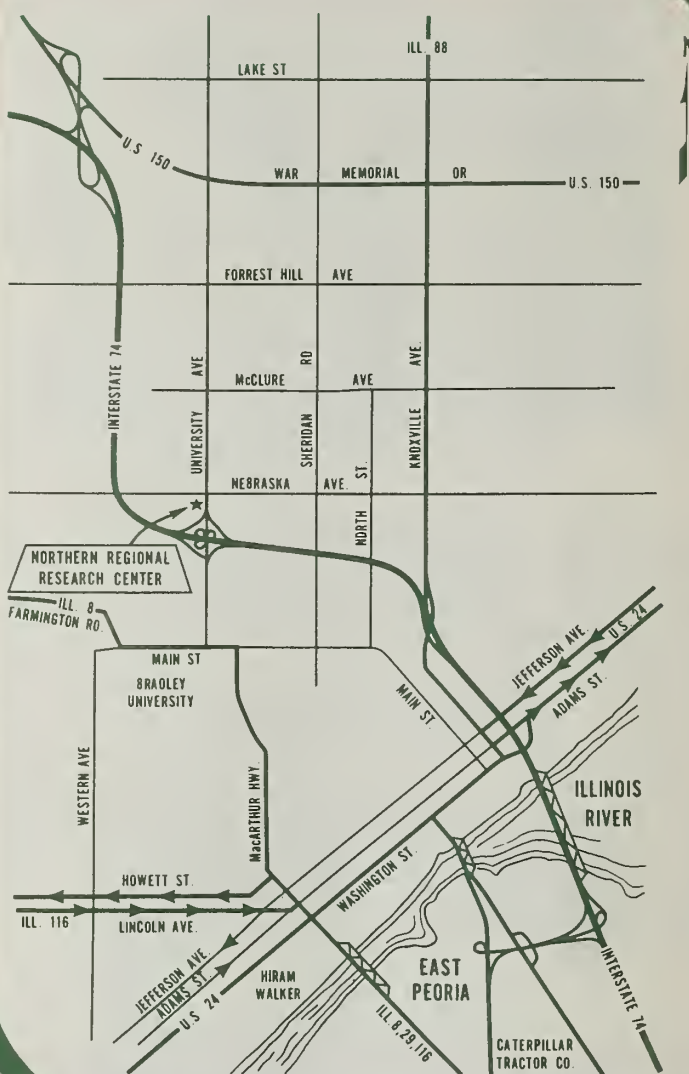
Visitors are welcome at the Northern Regional Research Center, which is conveniently located just north of the Interstate 74-University Street interchange.

Tour arrangements should be made in advance. Children 12 years of age and older may be included in tours. Foreign nationals must have the proper clearance.

Business hours are from 8:00 a.m. to 4:30 p.m., Monday through Friday, except holidays.

NRRC Library





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